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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,942	04/06/2001	Ray Alan Mentzer	10004068-1	6687

7590 10/18/2005

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EXAMINER	
AGGARWAL, YOGESH K	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/827,942	MENTZER, RAY ALAN	
	Examiner	Art Unit	
	Yogesh K. Aggarwal	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/28/2005 has been entered.

Response to Arguments

2. Applicant's arguments filed 06/03/2005 have been fully considered but they are not persuasive.

Examiner's response:

3. Applicant's argue with regard to claim 1 that the stabilized value V is input to A/DC converter 282 to generate a first digitalized word and this is further input to a Programmable Read only memory (PROM 284), which stores the first word and generates +Ref and -Ref analog signals after inputting through DACS 286 and 288. However, the PROM 284 is a READ ONLY memory, and thus, cannot be used to store the first digitalize word or anything else. Rather, the PROM 284 is pre-programmed to perform some sort of look-up function in response to received first digitalized word producing an upper digital code and a lower digital code, to be converted to an upper analog signal and a lower analog signal by digital-to-analog converter (DAC) 286 and 288. The Examiner respectfully disagrees.

4. PROM (Programmable read only memory) is defined in IEEE Standard dictionary of Electrical and Electronics Terms as a type of read-only memory whose contents can be initialized, or burned, only once, and cannot therefore be altered. Also www.webopedia.com

defines PROM as a memory chip on which data can only be written once. Webopedia further defines a key difference between a PROM and a ROM (read only memory) is that a PROM is manufactured as a blank memory, whereas a ROM is programmed during the manufacturing process. Therefore as described in Dolazza, the first digital word that provides a general indication of the overall level of the signal S, is received by a programmable read only memory look-up table (PROM) 284 producing an upper digital code and a lower digital code based on a lookup table, to be converted to an upper analog signal and a lower analog signal by DACs 286 and 288 respectively (col. 10 lines 15-22). The look up table has to be stored in the PROM 284 previously by the camera operator (not by the manufacturer) based on some kind of previously processed pixel value. Based on the definition of PROM it can only be initialized once, therefore the stored lookup table is based on an image signal of a previously processed pixel value and generates the upper and lower digital code values. It is also noted that the claim broadly recites, "providing a high signal and a low signal based on an image signal of a previously processed pixel". Therefore the claim can be interpreted to mean a previously processed pixel value stored as a lookup table in the PROM (as in Dolazza). It does not explicitly recite that the previously processed pixel is transmitted to the DAC to generate a range about said image signal. Therefore in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., providing a high signal and a low signal based on an image signal of a previously processed pixel that is transmitted to the DAC) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

5. Applicants further argue that new +Ref and -Ref analog signals are produced for each sample signal from the S/H element 280. Therefore, Dolazza does not disclose the element of "providing a high signal and a low signal based on an image signal of a previously processed pixel". The Examiner respectfully disagrees. Even though new upper and lower values are generated each time, they are based upon a previously stored look up table that is based on some kind of image signal of a previously processed pixel. As explained above the claim is broad enough to be interpreted as a previously processed pixel value stored as a lookup table in the PROM (as in Dolazza) because it does not explicitly recite that the previously processed pixel is transmitted to the DAC to generate a range about said image signal.

6. Applicant's argue with respect to claim 4, 13 and 19 that a preset black reference value is being equated to an analog signal of a previously processed pixel. The Examiner is broadly reading a preset black reference value as a previously processed pixel.

7. Applicant's argue with respect to claim 12 that there is no clear line of reasoning as to why it is obvious to use a 10 bit D/A converter and 7 bit A/D converter. It is well known in the art to use these circuits for high sensitivity because of more bits. Furthermore because the applicant did not contest the office's use of Official Notice in previous action, the teaching that it is well-known to use a 10 bit D/A converter and 7 bit A/D converter is hereby understood to be held as prior art.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim1-3, 9, 10 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Dolazza (US Patent # 4,573,035).

[Claim 1]

Dolazza teaches a method of correcting erroneous image signals (col. 10 lines 31-40) comprising providing a high signal and a low signal (figure 7, +Ref and –Ref) based on an image signal of a previously processed pixel [The +Ref and –Ref analog signals so generated are used to digitize a stabilized value of the analog signal V. This is true for first analog signal. The subsequent values of stabilized sample V (output of element 280) that is input to the A/DC 290 is digitized by the +Ref and –Ref already generated. Therefore the current value of analog signal from S/H 280 is converted to a digital output based on the upper and lower reference signals respectively, which are only generated once], said high signal and said low signal defining a signal range about said image signal of said previously processed pixel (+Ref and –Ref define a range); and digitizing an analog signal of a current pixel using said high and low signals as references to derive a digitized signal of said current pixel (output of S/H 280) within said signal range, including limiting said analog signal of said current pixel by said high and low signals (col. 10 lines 22-30).

[Claim 2]

Dolazza teaches a step of converting said image signal of said previously processed pixel to said high signal and said low signal (figure 7, +Ref and –Ref).

[Claim 3]

Dolazza teaches wherein said step of converting said image signal of said previously processed pixel includes digital-to-analog converting (figure 7, 286 and 290) said image signal of said

previously processed pixel to said high signal and said low signal (figure 7, +Ref and –Ref), wherein said high and low signals are generated as voltages.

[Claims 9, 10]

These are apparatus claims corresponding to method claims 1 and 3 respectively. Therefore they have been analyzed and rejected based upon method claims 1, 3.

[Claim 17]

Dolazza teaches a method of correcting erroneous image signals (col. 10 lines 31-40) during analog-to-digital conversion comprising a sensor array of photosensitive pixels (figure 1, element 114), each of said photosensitive pixels being configured to accumulate an analog image signal when exposed to light (col. 5 lines 60-65) and an analog-to-digital converter unit (figure 1, element 125) operatively coupled to said sensor array to receive analog image signals from said photosensitive pixels, said analog-to-digital converter unit comprising a digital-to-analog converter (figure 286 and 288) that outputs a high signal and a low signal (figure 7, +Ref and –Ref) based on an image signal of a previously processed pixel [The +Ref and –Ref analog signals so generated are used to digitize a stabilized value of the analog signal V. This is true for first analog signal. The subsequent values of stabilized sample V (output of element 280) that is input to the A/DC 290 is digitized by the +Ref and –Ref already generated. Therefore the current value of analog signal from S/H 280 is converted to a digital output based on the upper and lower reference signals respectively, which are only generated once], said high signal and said low signal defining a signal range about said image signal of said previously processed pixel (+Ref and –Ref define a range); and

An analog-to-digital converter (figure 7, element 290) having a high reference input and a low reference input to receive said high signal and said low signal (+Ref and –Ref), said analog-to digital converter being configured to digitize an analog signal of a current pixel (output of block 280) using said high and low signals as references to derive a digitized signal of said current pixel within said signal range, including limiting said analog signal of said current pixel by said high and low signals (col. 10 lines 22-30, figure 7).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 6, 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolazza (US Patent # 4,573,035).

[Claim 6]

Dolazza is silent as to the type of analog-to-digital converter, however Official notice is taken of the fact that it is notoriously common to have a flash analog-to-digital converter be used for digitizing a current pixel in order to make the overall process faster. Therefore taking the combined teachings of Dolazza and Official notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have flash analog-to-digital converter be used for digitizing a current pixel. The benefit of doing so would be because flash A/Ds have high input bandwidth and very high speeds in the 1 to 4-Gsample/s range.

[Claim16]

This is an apparatus claim corresponding to method claim 6. Therefore it has been analyzed and rejected based upon method claim 6.

[Claim 21]

This claim is substantially similar to claim 16. Therefore it has been analyzed and rejected based upon claim 16.

12. Claims 4, 5, 8, 11-14, 18,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolazza (US Patent # 4,573,035) in view of Kim (US Patent # 6,587,144).

[Claims 4 and 5]

Dolazza teaches the limitations of claim 1 but fails to teach ".... Wherein a step of comparing said analog signal of said current pixel with an analog signal of a previously processed pixel and further comprising a step of converting said image signal of said previously processed pixel to said high signal and said low signal, wherein said high and low signals are dependent on said comparing of said analog signal of said current pixel with said analog signal of said previously processed pixel". However Kim teaches comparing (figure 1, element 42) a present black level signal (read as current pixel signal value) and a preset black reference value (read as previously processed pixel value) to up or down values so that the DC voltage level of the signal is adjusted (col. 2 lines 12-23)[DC voltage ca be either high or low and therefore can be read as high and low signals which are dependent on the comparison between a present black level and preset black reference value]. Therefore taking the combined teachings of Dolazza and Kim, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have comparing said analog signal of said current pixel with an analog signal of a previously processed pixel and further comprising a step of converting said image signal of said previously

processed pixel to said high signal and said low signal, wherein said high and low signals are dependent on said comparing of said analog signal of said current pixel with said analog signal of said previously processed pixel. The benefit of doing so would be to correct the black level due to an incorrect pixel as taught in Kim (col. 2 lines 20-21).

[Claim 8]

Dolazza teaches wherein said image signal of said previously processed pixel is a digital signal (output of element 282 in figure 7) but fails to teach "...., wherein said image signal has more bits than said digitized signal of said current pixel". However Kim teaches that the A/d converter output has 10 bits as compared to a 6-bit black level reference value (col. 4 lines 25-30). Therefore taking the combined teachings of Dolazza and Kim, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have an image signal having more bits than said digitized signal of said current pixel. The benefit of doing so would be to vary the black reference value as needed as taught in Kim (col. 4 lines 25-26).

[Claim 11]

This is an apparatus claim corresponding to method claim 8. Therefore it has been analyzed and rejected based upon method claim 8.

[Claim 12]

Dolazza teaches a six bit D/A and A/d converter but does not disclose a 10 bit D/A and 7 bit A/D converter. However Official notice is taken of the fact that a 10 bit D/A and 7 bit A/D converter is well known in the art in order to have more sensitivity. Therefore taking the combined teachings of Dolazza, Kim and Official notice, it would have been obvious to one skilled in the

art at the time of the invention to have been motivated to have used a seven-bit value. The benefit of doing so would be to have a circuit, which has high sensitivity.

[Claim 13]

This is an apparatus claim corresponding to method claims 4 and 5. Therefore it has been analyzed and rejected based upon method claims 4 and 5.

[Claim 14]

Claim 14 recites what was discussed with respect to claim 12.

[Claim 18]

This claim is substantially similar to claim 11. Therefore it has been analyzed and rejected based upon claim 11.

[Claim 19]

This claim is substantially similar to claim 13. Therefore it has been analyzed and rejected based upon claim 13.

13. Claims 7, 15, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolazza (US Patent # 4,573,035) in view of Embler (US Patent # 6,654,054).

[Claim 7]

Dolazza teaches that the digitized signal is based upon the previously processed pixel as discussed in claim 1 but fails to teach ".... a step of adding a conversion signal to said digitized signal of said current pixel". However Embler teaches that an anti-noise signal is added to the digital signal (col. 11 lines 32-38). Therefore taking the combined teachings of Dolazza and Embler, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a step of adding a conversion signal to said digitized signal of said

current pixel. The benefit of doing so would be to ensure an appropriate that an appropriate noise signal is cancelled as taught in Embler (col. 11 lines 32-38).

[Claim 15]

This is an apparatus claim corresponding to method claim 7. Therefore it has been analyzed and rejected based upon method claim 7.

[Claim 20]

This claim is substantially similar to claim 15. Therefore it has been analyzed and rejected based upon claim 15.

Conclusion

14. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)-272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
October 7, 2005

DAVID L. OMETZ
SUPERVISORY PATENT
EXAMINER